



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2017-0904; Product Identifier 2017-NM-071-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 787-8 and 787-9 airplanes. This proposed AD was prompted by a report of an in-service reliability issue of a latent flow sensor failure combined with single cabin air compressor (CAC) operation. This condition resulted in reduced airflow which led to a persistent single CAC surge condition that caused overheat damage to the CAC inlet. This proposed AD would require installing new pack control unit (PCU) software for the cabin air conditioning and temperature control system (CACTCS) and new CAC outlet pressure sensor J-tube hardware, and doing related investigative and corrective actions if necessary. We are proposing this AD to address the unsafe condition on these products.

**DATES:** We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110 SK57, Seal Beach, CA 90740-5600; telephone: 562-797-1717; Internet: <https://www.myboeingfleet.com>. You may view this service information at the FAA, Transport Standards Branch, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-0904.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-0904; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Caspar Wang, Aerospace Engineer, Cabin Safety and Environmental Systems Section, FAA, Seattle ACO Branch, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6414; fax: 425-917-6590; email: [caspar.wang@faa.gov](mailto:caspar.wang@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2017-0904; Product Identifier 2017-NM-071-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. We will consider all comments received by the closing date and may amend this NPRM because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this NPRM.

### **Discussion**

Boeing Model 787-8 and 787-9 airplanes have two air conditioning packs, one on each side of the airplane. Each pack contains two CACs that function together under normal operating conditions. The Smarter Environmental Control System ensures that airflow is distributed equally across the CACs. If the airflow is low, a single operating CAC on a pack can be driven into an undetected surge. We have received a report of an in-service reliability issue involving a latent flow sensor failure combined with single CAC operation, which resulted in reduced airflow and a persistent single CAC surge condition. During the surge, the temperature exceeded the 450-degree Fahrenheit maximum allowable temperature and generated enough heat energy to degrade the structural integrity of the CAC inlet. The PCU software logic was only designed to detect the surge when both CACs were operating on the same pack, and therefore, it was unable to detect a persistent single CAC surge condition which led to CAC inlet overheating.

This overheating condition resulted in structural degradation of the CAC inlet, fumes in the cabin and flight deck, and interruption to in-service air conditioning.

In addition, we received a report of an in-service event involving foreign object debris in the CAC inlet and accumulation at the ozone converter that also led to a persistent single CAC surge resulting in overheat damage to the CAC inlet housing. The proposed PCU software change would redistribute the airflow to provide more flow to a single CAC, reducing the potential for a CAC surge. Reduced airflow leading to persistent CAC surge conditions and CAC inlet overheating, if not corrected, could result in structural degradation of the CAC inlet, and fumes in the cabin and flight deck, as well as causing interruption to in-service air conditioning.

#### **Related Service Information under 1 CFR part 51**

We reviewed Boeing Service Bulletin B787-81205-SB210075-00, Issue 003, dated March 29, 2017; and Boeing Service Bulletin B787-81205-SB210077-00, Issue 003, dated October 20, 2016. The service information describes procedures for installing new PCU software for the CACTCS and new CAC outlet pressure sensor J-tube hardware, and doing related investigative and corrective actions. These documents are distinct since they apply to different airplane models. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

#### **FAA's Determination**

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

#### **Proposed AD Requirements**

This proposed AD would require accomplishing the actions specified in the service information described previously. For information on the procedures and

compliance times, see this service information at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-0904.

The phrase “related investigative actions” is used in this proposed AD. Related investigative actions are follow-on actions that (1) are related to the primary action, and (2) further investigate the nature of any condition found. Related investigative actions in an AD could include, for example, inspections.

The phrase “corrective actions” is used in this proposed AD. Corrective actions correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

### **Costs of Compliance**

We estimate that this proposed AD affects 62 airplanes of U.S. registry. We estimate the following costs to comply with this proposed AD:

#### **Estimated costs**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Software Installation	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$5,270
Modify Left and Right Inboard and Outboard CAC Modules	20 work-hours X \$85 per hour = \$1,700	\$22,821	\$24,521	\$1,520,302

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in this proposed AD.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This proposed AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes to the Director of the System Oversight Division.

### **Regulatory Findings**

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**The Boeing Company:** Docket No. FAA-2017-0904; Product Identifier 2017-NM-071-AD.

#### **(a) Comments Due Date**

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to The Boeing Company Model 787-8 and 787-9 airplanes, certificated in any category, as identified in the applicable service information specified in paragraphs (c)(1) and (c)(2) of this AD.

(1) Boeing Service Bulletin B787-81205-SB210075-00, Issue 003, dated March 29, 2017 (for Model 787-8 airplanes).

(2) Boeing Service Bulletin B787-81205-SB210077-00, Issue 003, dated October 20, 2016 (for Model 787-9 airplanes).

**(d) Subject**

Air Transport Association (ATA) of America Code 21, Air conditioning.

**(e) Unsafe Condition**

This AD was prompted by a report of an in-service reliability issue involving a latent flow sensor failure combined with single cabin air compressor (CAC) operation. This condition resulted in reduced airflow which led to a persistent single CAC surge condition that caused overheat damage to the CAC inlet. We are issuing this AD to prevent CAC inlet overheating leading to structural degradation of the CAC inlet, fumes in the cabin and flight deck, and interruption to in-service air conditioning.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Software and Hardware Installation**

Within 36 months after the effective date of this AD: Install new pack control unit software for the cabin air conditioning and temperature control system and new CAC outlet pressure sensor J-tube hardware, and do all applicable related investigative and corrective actions; in accordance with the Accomplishment Instructions of the applicable service information specified in paragraphs (g)(1) or (g)(2) of this AD. Related investigative and corrective actions must be done before further flight.

(1) For Boeing Model 787-8 airplanes: Boeing Service Bulletin B787-81205-SB210075-00, Issue 003, dated March 29, 2017.

(2) For Boeing Model 787-9 airplanes: Boeing Service Bulletin B787-81205-SB210077-00, Issue 003, dated October 20, 2016.

**(h) Credit for Previous Actions**

This paragraph provides credit for the actions specified in paragraph (g) of this AD, if those actions were performed before the effective date of this AD using the applicable service information specified in paragraphs (h)(1) or (h)(2) of this AD.

(1) Boeing Service Bulletin B787-81205-SB210075-00, Issue 002, dated May 11, 2016 (for Model 787-8 airplanes).

(2) Boeing Service Bulletin B787-81205-SB210077-00, Issue 002, dated May 11, 2016 (for Model 787-9 airplanes).

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(j) Related Information**

(1) For more information about this AD, contact Caspar Wang, Aerospace Engineer, Cabin Safety and Environmental Systems Section, FAA, Seattle ACO Branch, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6414; fax: 425-917-6590; email: caspar.wang@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110 SK57, Seal Beach, CA 90740-5600; telephone: 562-797-1717; Internet: <https://www.myboeingfleet.com>. You may view this service information at the FAA, Transport Standards Branch, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on September 25, 2017.

Dionne Palermo,  
Acting Director,  
System Oversight Division,  
Aircraft Certification Service.  
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